

ATTACHMENT J.4.62

SILO 3 SAFETY BASIS APPENDIX L OF PL-3049

APPENDIX L

Silo 3 Basis for Interim Operations

RECORD OF ISSUE/REVISIONS

<u>DATE</u>	<u>REV NO</u>	<u>DESCRIPTION AND AUTHORITY</u>
01-08-96	0	This BIO for Silo 3 documents the Safety Basis for continued operations in and around the nuclear facility in accordance with DOE Orders 5480.22, <i>Technical Safety Requirements</i> and 5480.23, <i>Nuclear Safety Analysis Reports</i> . The BIO is an attachment to PL-3049, Implementation Plan for Safety Analysis Reports and Technical Safety Requirements at the Fernald Environmental Management Project and is subject to change only under the Unreviewed Safety Question (USQ) Program per NS-0002, <i>Unreviewed Safety Question</i> .
7/11/97	1	Annual update of this BIO; clarified references.

APPENDIX L.

Silo 3

Basis for Interim Operations (BIO)

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APPENDIX L SILO 3 AREA BASIS FOR INTERIM OPERATIONS (BIO)

L-1 EXECUTIVE SUMMARY

Silo 3 is used for the storage of metal oxide by-products from refinery operation. As stated in the *Preliminary Safety Analysis Report for Operable Unit 4* (PSAR) (Reference 1), Silo 3 is classified as a Category 3 hazard.

The hazards and activities associated with Silo 3 for its current activities (storage) are described in the PSAR (Reference 1), the Safety Evaluation Report (SER) (Reference 2), and the Remedial Investigation (RI) (Reference 3).

Based on the hazards, the accident analysis, and the associated protective measures described in the PSAR and in the referenced support documents, the activities performed in Silo 3 may safely continue.

L-2 INTRODUCTION

This BIO demonstrates that the activities involving Silo 3 are being performed in a manner that protects FEMP workers and the public from the hazards associated with its operation. The prime function of the facility is the storage of by-products from the Refinery. The prime activity is supplemented by routine inspection and maintenance.

The PSAR (Reference 1) addresses the construction of the Vitrification Pilot Plant and operation of Silo 3. The DOE approved the PSAR for the Vitrification Pilot Plant and continued operation of the silo with its *Safety Evaluation Report on the Fernald Environmental Management Project for Operable Unit 4* (Reference 2). An Independent Review Team (IRT) assessment of the silos remediation path forward is being performed. When a final decision is made for Silo 3, appropriate safety documentation will be generated, which will address silo remediation efforts, the future modifications of the silos, and their associated support systems. This BIO is intended to cover only routine operation associated with Silo 3.

L-3 FACILITY DESCRIPTION

Table L3-1 describes the components of the facility. As shown in Figure L3-1, Silo 3 is located in the east portion of the FEMP adjacent to Paddys Run. Silo 3 is located adjacent to Silo 4, which is empty, and Silos 1 and 2, which are filled with pitchblende ore, uranium, thorium, and radium processing by-products. Silos 1 and 2 are discussed in Appendix K.

The silos and the associated support facilities are surrounded by a protective fence to prevent inadvertent access by employees or public.

INVENTORY

Silo 3 received dry residues from refinery ore processes. The contents - uranium, radium, thorium, silica, and other metal oxides - are quantified in the *Remedial Investigation Report for Operable Unit 4* (Reference 3).

ACTIVITIES

The function of Silo 3 is the storage of processed waste materials. In support of storage, routine inspection and maintenance activities are performed. Inspection and maintenance includes radon monitoring of Silos 1, 2, and 3, and the monitoring of the silo's structural integrity.

EQUIPMENT IMPORTANT TO SAFETY

There are no items designated as equipment that are important to safety

L-4 RELEVANT OPERATIONAL HISTORY

The following summarizes upgrades designed to prevent and mitigate the potential hazards associated with Silo 3:

<u>Date</u>	<u>Milestone</u>
1951	Construction begins
1963	Concrete coating applied
1991	Modification of silo and removal of equipment to enhance sealing

L-5 SAFETY MANAGEMENT

The safety of activities in the Silo 3 Area is ensured by the existence and application of sitewide Safety Programs, which include the following:

- 1) Emergency Preparedness and Occurrence Reporting
- 2) Environmental Monitoring
- 3) Fire Protection
- 4) Occupational Safety and Health
- 5) Quality Assurance
- 6) Radiological Control
- 7) Training
- 8) Institutional Safety and Management
- 9) Preoperational Assessment, Testing, Surveillance, Inspection, and Maintenance
- 10) Conduct of Operations
- 11) Asbestos Control

These safety programs are described in the attachments to this document. The safe management features of material storage and handling are generic to the FEMP. They are described in the generic safety documentation for activities (Appendices M, and N).

Routine access and normal building operations are controlled through the use of Work Permits, Job Safety Analyses, and approved operating procedures. The individual work permits implement the appropriate protective measures for a given task.

Work Permit subsets include 1) outage, 2) confined space, 3) penetration, 4) open flame/welded, 5) asbestos, 6) hazardous work, 7) chemical/hazardous material, and 8) radiological.

The Task Order system controls the movement of hazardous materials. The Task Order system is monitored by Safety Analysis and others to ensure that hazardous materials are not moved into unauthorized areas of the plant. This is ensured and emphasized by Safety Analysis sign-off of the Task Order.

Activities outside the authorized Safety Basis are controlled by the enforcement of the Unreviewed Safety Question (USQ) System and the Conduct of Operations program, which monitor work activities

L-6 SAFETY ANALYSIS

L-6.1 Hazard Categorization

Based on analysis of the unmitigated consequences of the bounding event, Silo 3 is Hazard Category 3 per the PSAR (Reference 1).

L-6.2 Hazard and Accident Analysis

The *Preliminary Safety Analysis Report for Operable Unit 4* (Reference 1) and the RI (Reference 3) analyze the hazards and accidents of the facility in its current condition.

L-7 SAFETY ENVELOPE

This BIO will govern the activities of the silo during storage. As facility cleanup progresses, the inventory will decrease. When the facility contains less than Hazard Category 3 threshold quantity limits, the decrease in hazard category will be documented. The facility will then become a radiological, non-nuclear, or other industrial facility, and will no longer be governed by this BIO.

The safety envelope for Silo 3 is defined in the applicable Safety Analysis Report (the PSAR), the corresponding Safety Evaluation Report, and the RI.

L-7.1 Silo 3 Activities

The following activities are permitted within the Safety Envelope:

- 1) Storage of material within the silo ,with its supporting activities such as sampling, monitoring, etc.

- 2) Routine inspection and maintenance, including operation of the radon monitoring system
- 3) General support and management activities

L-8 CONCLUSION

The current activities of Silo 3 may safely continue so long as the measures described in the PSAR (Reference 1) are in effect.

L-9 REFERENCES

- 1) Fernald Environmental Restoration Management Corporation, April 1994. *Preliminary Safety Analysis Report for Operable Unit 4*, FEMP-2337.
- 2) United States Department of Energy, August 1994. *Safety Evaluation Report on the Fernald Environmental Management Project for Operable Unit 4*, DOE-2312-94.

Table L3-1 - Silo 3 Components

Component Name	Description	Manufacturing Function	Present Function
Silo 3, including contents/1952	80 feet in diameter and 27 feet high with a 36 foot high dome; prestressed concrete cylinder wall, 8 inches thick,	Storage of refinery by-products including uranium, radium, thorium, silica, and other metal oxides	Storage
Dome	8 inches thick at walls, 4 inches thick at apex, with five 20-inch manholes	Protect stored material	Protect stored material
Radon Monitoring System	Monitors located near the silos, other locations on site, and at the site boundary	Monitor radon	Monitor radon